

TWO NEW SNAILS OF THE GENUS *CAMPELOMA* FROM ONTARIO

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The snails herein described were collected in two different localities of southern Ontario, Canada. The specimens of *Campelema leptum* n. sp., were taken by M. S. Ferguson from a mill pond near St. Thomas, Ontario, representing three collections taken during the summers of 1936 and 1937. The samples of *C. tannum* n. sp. were gathered by J. C. Medeof and J. Oughton from the Speed River near Hespeler, Ontario, in two collections, 1932 and 1937.

For a comparison with the two species here described, the writer has examined specimens of *C. milesii* and *C. decisum*. The specimens of *C. milesii* were collected at Grosse Isle, Michigan, and presented to the writer by Dr. van der Schalie. Approximately 300 specimens of this collection were carefully examined for comparisons. Of those examined all were females, suggesting that this species is also a "female species." Eight specimens of *C. decisum* from the North River, Lexington, Virginia, were loaned by Dr. Paul Bartsch of the U. S. National Museum. All of these animals were also females.

The writer is indebted to Dr. M. S. Ferguson, Dr. J. C. Medeof, Dr. H. van der Schalie, Dr. Paul Bartsch, and Mr. J. Oughton for contributing the specimens used in the present study. He is also appreciative of the generous advice and assistance given him by Mr. Frank C. Baker.

Type specimens will be filed in the U. S. National Museum and paratypes in the Academy of Natural Sciences of Philadelphia.

CAMPELOMA LEPTUM n. sp. Plate 1, figs. 1, 2, 3.

As previously mentioned, these snails were taken from a mill pond near St. Thomas, Ontario, Canada. The total number of individuals in the three samples is approximately 2,000, of which the writer has critically examined about 700. Since no male individuals have been encountered in these examinations, it has been concluded that *C. leptum* is a "female species" like *C.*

rufum. The latter has previously been shown by the writer (1938)¹ to be a "female species," or parthenogenetic. No sinistral shells were encountered in this species.

Shell: Elongate-ovate, subfusiform, very thin; color light olive, through dark green; surface smooth, lines of growth fine; very fine, indistinct, revolving striae which are epidermal; apex narrow and pointed, sutures deeply impressed; spire long and pointed, markedly conical and acute, no erosion; whorls six or more, flatly rounded; sutures very deeply impressed; aperture elongate-ovate, more ovate, rounded below and above, bluish within; peristome sharply acute; columellar wall of aperture covered by a callous appressed to the parietal wall in a nearly straight line; lower part of the inner lip is deflected and erect, and is incompletely imperforate leaving a small chink.

The following measurements represent those of ten individuals taken at random from the collections.

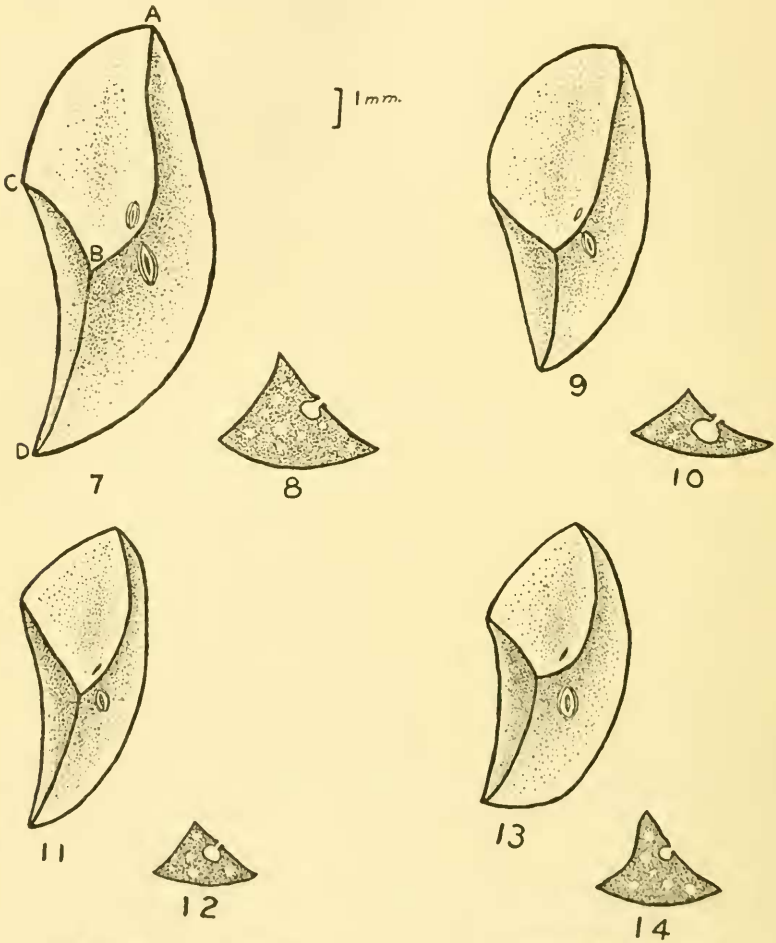
L. 27.8; W. 16.1; Ap. L. 12.5; Ap. W. 9.8 mm.
L. 27.5; W. 15.6; Ap. L. 11.9; Ap. W. 10.0 mm.
L. 27.2; W. 16.0; Ap. L. 12.6; Ap. W. 10.1 mm.
L. 25.8; W. 15.5; Ap. L. 11.8; Ap. W. 9.6 mm.
L. 25.0; W. 14.5; Ap. L. 11.4; Ap. W. 9.0 mm.
L. 24.5; W. 14.6; Ap. L. 11.1; Ap. W. 9.1 mm.
L. 24.4; W. 14.0; Ap. L. 11.2; Ap. W. 9.1 mm.
L. 23.7; W. 14.3; Ap. L. 11.0; Ap. W. 9.1 mm.
L. 22.8; W. 13.9; Ap. L. 10.7; Ap. W. 8.6 mm.
L. 22.7; W. 13.4; Ap. L. 10.6; Ap. W. 8.5 mm.

Operculum: Elongate-ovate, lower margin rounded, apex narrowly rounded, right margin rounded, left margin concave toward the apex, producing an in-curved tip; nucleus situated medially near the columellar, or left margin; markings concentric; the operculum is thin and horny. It fits the aperture snugly when drawn in deeply.

Animal: In living conditions the foot is very light, steel gray, heavily pigmented with orange spots (gives an orange appearance); tentacles dark gray, less pigmented; rostrum lighter pigmented with orange; body gives a light cream appearance, almost white; thin scattering of yellow-orange pigment over lateral surface of mantle, dorsal mantle surface with thin scattering of black pigment; black pigment on digestive gland. Albumen gland cream color; albumen loop (oviduct) yellow in first portion, pink in upper portion; follicles of digestive gland light, olive green, inter-follicular spaces white; ctenidia very long, extending to

¹ Jour. Morph., Vol. 62, No. 2, 243-261.

very near edge of mantle, pink on ventral edge, short side white; osphradium, a high ridge, gray pigmented; vaginal tube pink; rectum light gray.



Ventral view of surfaces of kidney of: 7, *Campeloma leptum*; 9, *C. tannum*; 11, *C. decisum*; 13, *C. milesi*.

Cross section through point "B" of the kidney of: 8, *C. leptum*; 10, *C. tannum*; 12, *C. decisum*; 14, *C. milesi*.

The kidney (Fig. 7) is extremely elongated and narrowed, being horn shaped. As shown by the cross-section (Fig. 8), it is very high ridged. The urinary aperture is long and narrow with well-defined papillae and is located slightly anterior to the

medial apex of the gland (point B). The reno-pericardial aperture is more prominent than in other species. The mantle cavity surface of the gland (B-C-D) is very narrow and elongated. The proportions of the ridge A-B to the ridge B-D are 4 to 5. The same proportions for *decisum* (Fig. 11) are 6 to 5 and for *milesii* (Fig. 13) 4 to 3.

C. leptum closely resembles *C. decisum*, but differs in the extremely thin shell, darker pigment of epidermis, and more elongated shell. The sutures are more deeply impressed, the aperture is more nearly round and the opereulum is thinner and has a more pronounced concave left margin. The average width of the shell is 60% of the length, that of *decisum*, 57%; aperture width is 80% of the aperture length, that of *decisum*, 72%; aperture length 45% of length of the shell, *decisum*, 48%; aperture width of the shell width 62%, *decisum* 60%. The extremely elongated kidney is also a character differing from the kidneys of all other species. It is believed by the writer that the shape and proportions of the surfaces of the kidneys and its apertures may be used as specific characters. This has been determined after an examination of the kidneys of nine species of the genus.

CAMPELOMA TANNUM n. sp. Plate 1, figs. 4, 5, 6.

Specimens of this species were collected in the Speed River near Hespeler, Ontario. The writer has critically examined approximately 150 individuals of this species, all of which were normal, dextral females. It has been assumed from this examination that this is also a "female species," as are *C. leptum* and *C. rufum*.

Shell: Ovate-elongate, relatively thin; color a very light brown or tan to a pale green; surface very smooth, lines of growth not prominent, revolving striae absent or nearly so; apex very long and narrow, sutures well impressed, but not deep; spire long, conical, no erosion; whorls generally six, rounded; sutures not deeply impressed; aperture ovate-elongate, more ovate, well-rounded below, slightly channeled, definitely pink within; peristome sharp; columellar wall of aperture with callus tightly appressed to parietal wall, with a brownish edge of a slightly sigmoid shape, completely imperforate.

The following measurements are of specimens taken at random from the collections.

L. 31.9; W. 19.9; Ap. L. 14.2; Ap. W. 12.0 mm.
L. 28.3; W. 16.6; Ap. L. 13.5; Ap. W. 11.3 mm.
L. 23.3; W. 14.5; Ap. L. 11.8; Ap. W. 9.4 mm.
L. 23.2; W. 14.2; Ap. L. 11.6; Ap. W. 9.1 mm.
L. 22.0; W. 13.5; Ap. L. 11.5; Ap. W. 9.0 mm.
L. 22.0; W. 14.0; Ap. L. 11.4; Ap. W. 9.0 mm.
L. 20.3; W. 13.2; Ap. L. 10.2; Ap. W. 8.5 mm.
L. 19.7; W. 12.6; Ap. L. 10.0; Ap. W. 8.2 mm.
L. 19.4; W. 12.8; Ap. L. 10.0; Ap. W. 8.1 mm.
L. 18.3; W. 12.1; Ap. L. 9.6; Ap. W. 7.9 mm.

Operculum: Broadly ovate-elongate; lower margin rounded, apex narrowly rounded, right margin rounded, left margin nearly straight only slightly concave, but not producing a curved apex; nucleus sub-central, near the columellar or left margin; markings concentric; thin and horny.

Animal: The living animal has not been examined. In alcohol specimens, there is an indication of a dark pigmentation over the entire body; tentacles are very dark; darker pigmentation over the digestive gland. Albumen gland light in color, very compactly compressed; albumen loop very long; etenidia very wide, short side very short; osphradium small, a low ridge not extending very far along the gill; vaginal tube, rectum and urethral aperture well marked.

The kidney (Fig. 9) is very wide and heavy. The posterior surface (A-B-C) is very broad; the mantle cavity surface (B-C-D) is rather short and triangular. The urinary aperture is nearer the medial apex (point B) than in *leptum*. The proportions of the ridge A-B to the ridge B-D are 7 to 4 as against those of 4 to 5 for *leptum*, 6 to 5 for *decisum*, and 4 to 3 for *milesii*.

C. tannum is intermediate between *C. decisum* and *milesii*, not as elongate as *decisum*, *decisum* is more flat-sided, nor as wide or full as *milesii*. The pink color of the aperture opening is very similar to that of *rufum*, however, *tannum* has a much thinner shell and is more elongate than *rufum*. *C. tannum* is similar to the foregoing species, *leptum*, but differs in the epidermal color, inner color of the shell, shape of the operculum, and in not being as narrow as *leptum*. The heavy kidney of this species is similar only to that of *integrum*, which is very different in its much heavier shell to *tannum*. The average width of the shell is 62% of its length, that of *decisum* 57%, *milesii* 66%, *leptum* 60%; aperture width is 81.5% of the aperture length, that of *decisum* 72%, *milesii* 85%; aperture length 49% of the shell length, of

decisum 48%, *milesii* 55%, *leptum* 45%; aperture width is 64% of the shell width, *decisum* 60%, *milesii* 66%, *leptum* 62%.

A NEW HELISOMA FROM THE PLIOCENE OF FLORIDA

BY FRANK C. BAKER

HELISOMA CLEWISTONENSE sp. nov. Pl. 1, fig. 8.

Shell of four whorls, very rapidly increasing in size, the body whorl very capacious; spire very small, depressed below the level of the body whorl, occupying about one-fifth of the diameter of the shell (spire 3 mm., shell 16 mm. diameter); base broad, the umbilical opening small, round, deep; base shows a trifle more than two whorls; sculpture of coarse growth lines, almost thread-like, and on the body whorl near the aperture raised into regular ridges; there are evidences of spiral lines; aperture somewhat auriform, narrowed and angled above, very wide below where the lower lip is effuse and is much in advance of the upper lip, forming a distinct "shelf": the lower lip is roundly curved and bent downward; there is a heavy callus on the columella which merges into the upper and lower lip; at the upper angle of the aperture the type shows two lips, an old one 6.5 mm. back of the last one.

Height 10.5; major diam. 15.5; lesser diam. 11.5; aper. height 9.0; diam. 6.0 mm.

Locality: Clewiston, Florida, in Pliocene strata.

This fossil species differs from any *Helisoma* observed from Florida. It appears nearest to the Mexican form known as *Helisoma tenue chapalense* Pils. from Lake Chapala, near Guadalajara, Mexico. It differs from that race in its narrower, smaller spire, more capacious body whorl, smaller umbilical area, and in the shape of the aperture. It is also of greater axial height. This species is totally unlike the common group of shells included in the subgenus *Seminolina*. It is a true *Helisoma* of the subgenus *Pierosoma*. A series of this shell is a desideratum to show the range of variation.

Holotype: U. S. Nat. Mus., no. 515222.